

Stöber, J., & Borkovec, T. D. (2002). Reduced concreteness of worry in generalized anxiety disorder: Findings from a therapy study. *Cognitive Therapy and Research*, 26, 89-96.

Reduced Concreteness of Worry in Generalized Anxiety Disorder:

Findings from a Therapy Study

Joachim Stöber\* and T. D. Borkovec

Pennsylvania State University

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\*Author for correspondence

Dr. Joachim Stöber

Martin Luther University of Halle-Wittenberg

Department of Educational Psychology

Franckesche Stiftungen, Haus 5

D-06099 Halle (Saale)

Germany

Phone : +49 345 55-23789

Fax : +49 345 55-27244

E-mail : [stoerber@paedagogik.uni-halle.de](mailto:stoerber@paedagogik.uni-halle.de)

### Abstract

A sample of clients diagnosed with generalized anxiety disorder (GAD) provided descriptions of the two major problems they worried about and of potential negative consequences associated with these problems, once before and once after they received cognitive-behavioral therapy. When descriptions were rated for concreteness and compared to those of normal controls, results showed that untreated GAD clients provided less concrete descriptions of their major worries relative to controls. After successful therapy, problem descriptions of GAD clients showed the same level of concreteness as those of controls. These findings add further support to the reduced-concreteness theory of worry. Moreover, they indicate that concretization of worries may play a prominent role in the reduction of pathological worry.

*Keywords:* worry, generalized anxiety disorder, avoidance, imagery, problem solving

### Introduction

Despite over 15 years of research directed at normal worry, pathological worry, and generalized anxiety disorder (GAD), the question "Why do people worry?" (Freeston, Rhéaume, Letarte, Dugas, & Ladouceur, 1994) still draws considerable debate. One approach aimed to answer this question is the avoidance theory of worry (Borkovec, Ray, & Stöber, 1998). According to this theory, worry functions as a cognitive avoidance response to threatening stimuli. Building on findings that worry consists mainly of verbal thought, that verbal thought about feared stimuli yields much less cardiovascular fear response than imagery of the same material (Vrana, Cuthbert, & Lang, 1986), and that people spontaneously use verbalization as a strategy for abstraction, disengagement, and inhibition of emotional arousal associated with arousing stimulus material (Tucker & Newman, 1981), the avoidance theory of worry holds that worrying may reduce the amount of aversive imagery associated with potential problems thus helping to avoid the somatic anxiety reaction associated with such imagery (for details, see Borkovec et al., 1998).

Empirical evidence for imagery reduction in worry comes from two experimental studies (Borkovec & Inz, 1990; East & Watts, 1994). Both studies demonstrated that the percentage of imagery individuals experience is greatly reduced when they are instructed to worry compared to when they are instructed to relax. Moreover, Borkovec and Inz (1990) found that clients diagnosed with GAD showed a lesser percentage of imagery than controls even when asked to relax. However, successful therapy changed the clients' avoidance of imagery/thoughts ratio so that they were no longer different from the control group.

Whereas reduced imagery in worry could reliably be demonstrated in both GAD clients and normal controls as well as in students with high levels of pathological worry, the question of *how* worrying may lead to reduced imagery remained an open issue (Borkovec et al., 1998). One potential solution to this question is presented by the reduced-concreteness theory of worry (Stöber, 1998, 2000b). According to this theory, concreteness of worrisome thought plays a central role in the experience of reduced imagery when worrying. Research in the framework of dual coding theory (Paivio, 1971, 1986) has demonstrated that verbal processes are always associated with imagery. The quality of imagery, however, is dependent on the concreteness of words and sentences. Abstract sentences evoke imagery

with less vividness, speed, and ease than concrete sentences (Paivio, 1991). Thus, if worrisome thought comprises words and sentences of reduced concreteness, this may explain how worry leads to reduced levels of imagery.

Furthermore, the reduced-concreteness theory of worry may explain why worrisome problem analyses are unlikely to arrive at suitable problem solutions. According to Tallis and Eysenck's (1994) model of the worry process, worry is initiated by the detection of threat, followed by negative thoughts and images. From this process, negative models of the future are constructed initiating a search for problem solution. Only selection and implementation of appropriate problem solutions will terminate the threat. Problem elaborations of reduced concreteness, however, will reduce the chances of finding concrete solutions. In this case, the threat is preserved, and worry continues. Finally, reduced concreteness of worrisome thought may provide a key for a further understanding of worry maintenance. First, worries of reduced concreteness are harder to correct by external experiences than are concrete worries (Stöber, 1998). Second, by avoiding concrete elaborations of worrisome problems, individuals may also avoid activation of the underlying fear-structures, thus impeding the emotional processing of the feared events. Without emotional processing, however, fear-incongruent information will not be integrated and the threatening meaning structures will be maintained (Foa & Kozak, 1986). Therefore, reduced concreteness may be an important component to explain the development and maintenance of pathological worry.

Empirical evidence for the reduced-concreteness theory of worry comes from two series of studies with nonclinical student participants (Stöber, 1996; Stöber, Tepperwien, & Staak, 2000). In these studies, participants were presented with the Worry Domains Questionnaire (WDQ; Tallis, Eysenck, & Mathews, 1992), a widely-used questionnaire for the measurement of nonpathological worry. The WDQ contains a list of everyday problems about which people may worry (e.g., being unattractive, running out of money, making mistakes at work). From this list, participants selected a number of problems for which they indicated different degrees of worry. To assess the thoughts associated with these problems, participants were asked to elaborate on the selected problems by writing down potential antecedents and/or potential negative consequences for these problems. Afterwards, independent judges rated the degree of concreteness of the participants' problem elaborations. Across studies, results showed that the elaborations of problems about which participants worried were considerably less concrete than those of problems about which they did not worry. Moreover, results showed a linear effect: The more participants worried about a given problem, the less concrete were their problem elaborations.

Even though the findings proved reliable across different studies and methods, three important areas remained for further pursuit. First, all previous studies on worry and reduced concreteness (Stöber, 1996; Stöber et al., 2000) have been conducted with nonclinical student samples. Therefore, the clinical significance of the reduced-concreteness theory of worry still needs to be demonstrated. To this end, the comparison of GAD clients with normal controls with respect to concreteness of worries and the possible impact of cognitive-behavioral treatment on the concreteness of the clients' worries would be useful. Second, previous studies have only demonstrated an association of reduced concreteness with amount of nonpathological worry that participants experienced. Amount of nonpathological worry, however, may tap into quite different aspects of worry than pathological worry (Davey, 1993; Stöber & Joormann, 2001). Therefore, a relationship between degree of pathological worry and reduced concreteness still needs to be examined. Third, all previous studies have investigated how participants elaborated on the potential antecedents and/or

potential consequences of standard problems taken from the WDQ with varying degrees of associated worry. In no previous study have participants' descriptions of their own worrisome problems been investigated. However, differences in concreteness may be even more pronounced when participants are asked to describe the actual problems about which they worry. To address these areas, the present study explored the concreteness of worry in a sample of GAD clients, both before therapy and after therapy, in comparison to normal controls in a design that also included measures of pathological worry and concreteness of the worries.

## Method

### *Participants*

Participants were a subsample of 11 GAD clients and 23 controls from a large GAD therapy study conducted by the Penn State Worry Group. Clients with a principal GAD diagnosis had been selected using two independent assessments with the Anxiety Disorders Interview Schedule (ADIS-IV; Brown, DiNardo, & Barlow, 1994), excluding clients with psychosis, substance abuse, and major affective disorder. Controls were selected if they had no currently diagnosable disorder and had not received pharmacological or psychological treatment for any psychological problem, as determined by a single ADIS interview. GAD clients (9 female, 2 male) had a mean age of 40.4 yr (range = 27-57 yr), and control participants (15 female, 8 male) had a mean age of 36.0 yr (range = 18-59 yr). Gender composition of GAD clients and controls did not differ significantly, Fisher's exact test,  $p = .44$ , nor did age,  $t(32) = 1.01$ ,  $p = .32$ .<sup>1</sup>

### *Procedure*

Participants received a short "problem elaboration questionnaire" as part of an assessment procedure. Due to time limitations imposed by the already existing assessment battery, participants were not asked to provide a comprehensive elaboration of antecedents and/or potential negative consequences of different worrisome problems as was done in the previous studies (Stöber, 1996; Stöber et al., 2000). Instead, they were asked (a) to provide a short written description of the two major problems about which they currently worried and (b) to write down three potential negative consequences for each of the two problems. Control participants completed the elaboration questionnaire once. GAD clients completed the elaboration questionnaire twice, once before and once after they received 14 weekly sessions of cognitive-behavioral therapy (CBT) for GAD, a package which has been shown to significantly reduce amount of pathological worry and GAD symptoms (e.g., Borkovec & Costello, 1993; for details on the CBT package, see Borkovec & Newman, in press).

Two graduate students trained in concreteness ratings independently rated participants' descriptions of the two major worry problems and their negative consequences using the concreteness rating scale of Stöber et al. (2000). This rating scale consists of the five categories: *abstract* (1), *somewhat abstract* (2), *neither-nor* (3), *somewhat concrete* (4), and *concrete* (5). In this scale, *abstract* was defined as "indistinct, cross-situational, equivocal, unclear, aggregated" and *concrete* was defined as "distinct, situationally specific, unequivocal, clear, singular." Both raters were blind to group status (GAD versus control) and temporal status (pre-therapy versus post-therapy) of the worry elaboration questionnaires. Moreover, they did not know the hypotheses of the study. With averaged

intraclass correlations (Shrout & Fleiss, 1979, Case 3) of .81 for the descriptions of the two major problem and .78 for those of the negative consequences, rater reliability of concreteness ratings was satisfactory. Therefore, we calculated (a) a total concreteness score for major worries by aggregating the concreteness ratings for the two problems about which participants currently worried and (b) a total concreteness score for negative consequences by aggregating the concreteness ratings for the six negative consequences that participants had generated.

To measure degree of pathological worry, all participants filled in the Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990). The PSWQ is a widely-used, reliable, and valid measure of pathological worry as experienced by clients diagnosed with GAD (for details on reliability and validity, see Molina & Borkovec, 1994; Stöber, 2000a). As with the elaboration questionnaire, controls completed the PSWQ once and GAD clients twice (once before and once after they received CBT).

## Results

Comparison of the concreteness of GAD clients' description of their worries at pre-therapy to that of the control group indicated that GAD clients' major worries were significantly less concrete than those of the controls (Table 1). In contrast, the concreteness of the potential negative consequences was not significantly different. Examination of the concreteness scores of the GAD group from pre-therapy to post-therapy indicated that worries at post-therapy assessment were significantly more concrete than worries prior to therapy. With an effect size of  $f = 1.08$ , the difference between pre-therapy and post-therapy concreteness of worries represented a very large effect, given that .80 is the established standard for a large effect (Cohen, 1988).<sup>2</sup>

Analysis of PSWQ scores confirmed that the CBT package lead to a significant and substantial reduction of pathological worry—over two standard deviations below the pre-therapy mean—in the GAD clients (Table 1). The large standard deviation of clients' post-therapy PSWQ scores, however, indicated that not all clients equally profited from the CBT package. To investigate if GAD clients with greater reduction of pathological worry also showed greater increases in concreteness of their worries, we first regressed (a) pre-therapy PSWQ scores on post-therapy PSWQ scores and (b) pre-therapy concreteness scores on post-therapy concreteness scores and then correlated the residuals from (a) and (b).<sup>3</sup> Although the resulting correlation of  $r = -.43$  failed to reach statistical significance,  $p = .09$ , one-tailed, the size of the correlation suggests that GAD clients' degree of therapy-related improvement may be related to concretization of their major worries. Clients with below average reduction of pathological worry showed less concretization of worries than clients with above average reduction of pathological worry.

## Discussion

The present findings add further support to the reduced-concreteness theory of worry (Stöber, 1998, 2000b). According to one aspect of the avoidance theory of worry (Borkovec et al., 1998), worry is a cognitive avoidance response to anxiety-inducing imagery. The CBT package devised by the Penn State Worry Group was designed partly to lower the fear associated with anxiety contents and employs imagery exposures to feared worry contents (Borkovec & Costello, 1993; Borkovec & Newman, in press). This may not only result in

normalization of the image/thought ratio as shown by Borkovec and Inz (1990), but may also lead to a concretization of the clients' worries as shown by the present findings. In sum, results showed that GAD clients described their major worries in less concrete terms than controls before therapy. Therapy then resulted in a significant concretization of worries, particularly for those GAD clients with the greatest reduction in pathological worry. Consequently, the present findings demonstrate that the association of worry and reduced concreteness is not limited to individual differences in amount of nonpathological worry. Instead, reduced concreteness of worrisome thought seems to play a major role also in pathological worry and GAD.

Because of the small sample size, the present findings are only preliminary. Future studies would usefully employ a larger sample of GAD clients and include a greater percentage of male participants. Moreover, they should include a long-term follow-up assessment to determine maintenance of change. In addition, it would be useful to add in other groups of psychiatric disorders to investigate whether reduced concreteness is specific for worry in GAD. For example, worry and depressive rumination seem to be closely related phenomena. Consequently, cognitive avoidance and reduced concreteness of problem elaborations may also be a significant factor in depression (Borkovec et al., 1998; Stöber, 2000b). Finally, it would be advantageous to examine a larger number of worry topics that differ in degree of associated worry, including also the elaboration of potential antecedents of worrisome problems in order to compare the results obtained with GAD clients to previous findings with nonclinical participants (Stöber, 1996; Stöber et al., 2000).

Notwithstanding these limitations, the present finding that therapy may lead to a concretization of clients' worries has potentially important implications. As worrisome thoughts of reduced concreteness may maintain worrying (Stöber, 1998), concretization of worries may contribute to a reduction of chronic worry. First, according to Tallis and Eysenck (1994), a central feature of worry is the construction of negative models of the future in order to initiate a search for problem solution. The concreteness of these models, however, is a necessary condition for finding solutions on how to prevent negative developments (Schönpflug, 1989): Only concrete problem elaborations are likely to lead to concrete problem solutions. An appropriate problem definition is the first step in a chain of steps leading to problem solution (D'Zurilla & Goldfried, 1971). Thus, if cognitive-behavioral treatment leads to a concretization of negative expectations, this may help in the selection and implementation of appropriate problem solutions, which in turn may help to terminate worrying. Second, concretization of worries may be helpful because concrete worries (e.g., "I may fail next week's exam") are easier to validate or invalidate by actual evidence than abstract worries (e.g., "I may be a failure"). Finally, concretization of one's worries may evoke aversive imagery and its consequential somatic anxiety reactions sufficient to allow emotional processing to take place (Foa & Kozak, 1986). Given the above implications, concreteness of worrisome thought may be a variable that warrants further attention in research related to the development, maintenance, and treatment of pathological worry and generalized anxiety disorder.

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#### Author Note

The present study was supported by DFG (German Research Foundation) grant STO 350/1-1 to the first author and by NIMH grant RO1-MH39172 to the second author. We would like to thank Jennis Freyer and Claudia Rechlin for the concreteness ratings as well as Claudia Dalbert, Alexandra Freund, Jutta Joormann, Matthias Siemer, and two anonymous reviewers for helpful comments and suggestions on earlier versions of this manuscript.

Address correspondence to Joachim Stöber who is now at the Martin Luther University of Halle-Wittenberg, Department of Educational Psychology, Franckesche Stiftungen, Haus 5, D-06099 Halle (Saale), Germany. E-mail: stoeber@paedagogik.uni-halle.de.

## Footnotes

<sup>1</sup>If not indicated otherwise,  $p$  values are from two-tailed tests. To acknowledge that the differences in gender composition and age may have been nonsignificant only because of the small sample sizes, we repeated all analyses (a) with gender included as a control variable and (b) with the four youngest participants of the control group excluded. The pattern of findings remained unaltered.

<sup>2</sup>For paired-sample mean differences, effect size is calculated using the formula  $f = \mu_y / \sigma_y$  with  $\mu_y = \mu_A - \mu_B$  and  $\sigma_y = \sqrt{(\sigma_A^2 + \sigma_B^2 - 2 r \sigma_A \sigma_B)}$  which—unlike the usual  $d$  statistic—takes the correlation  $r$  between values of A and B into account, here  $r_{\text{pre-post}} = .66$ ,  $p < .05$ . The interpretation of  $f$ , however, is equivalent to that of  $d$  (Buchner, Erdfelder, & Faul, 1997; Cohen, 1988).

<sup>3</sup>When analyzing change, it is recommended to use residuals,  $Y_2 - E(Y_2|Y_1)$ , instead of difference scores,  $Y_2 - Y_1$ , because difference scores are sensitive to ceiling and floor effects in the pretest scores,  $Y_1$ , have a problem of regression toward the mean, and usually show negative correlations with pretest scores (Dalbert, 1987; Tabachnick & Fidell, 1989).

Table 1

*Pathological Worry and Concreteness of Problem Elaborations of GAD Clients and Controls*

Dependent variable	Controls ( <i>n</i> = 23)		GAD clients ( <i>n</i> = 11)		Mean difference <sup>a</sup>			
			Pre-therapy	Post-therapy	GAD <sub>pre</sub> -Ctrl	GAD <sub>post-pre</sub>		
	<i>M</i>	( <i>SD</i> )	<i>M</i>	( <i>SD</i> )	<i>t</i> (32)	<i>t</i> (10)		
PSWQ	28.17	(7.31)	69.55	(6.31)	48.45	(12.85)	16.44***	− 4.61***
Concreteness								
Major worries	3.87	(0.59)	3.39	(0.70)	3.95	(0.44)	− 2.11*	3.59**
Negative consequences	3.37	(0.48)	3.33	(0.65)	3.33	(0.66)	− 0.20	0.04

*Note.* PSWQ = Penn State Worry Questionnaire. Concreteness was rated on a five-point scale from *Abstract* (1) to *Concrete* (5).

<sup>a</sup>GAD<sub>pre</sub>-Ctrl = pre-therapy scores of GAD clients compared to control group scores; GAD<sub>post-pre</sub> = post-therapy compared to pre-therapy scores within GAD clients.

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001. One-tailed tests.